

[19] Patent Office of the People's Republic of China

[11] Publication number CN 1137926A

**[12] Public Disclosure for the Application of Invention Patent**

**[21] Application Number** 96102673.1

		[51] Int. Cl <sup>6</sup> A61K 35 / 84
<b>[43] Publication Date</b>	December 18, 1996	
<b>[22] Application Date</b>	February 5, 1996	
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Patent Claim 2 pages, Description 4 pages, Figures 2 pages

<b>[54] Name Invention</b>	Chinese caterpillar fungus with a protective coating and the preparation thereof
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**[57] Abstract**

Chinese caterpillar fungus, also known as winter worm and summer grass, is a valuable Chinese herbal medicine. But as a raw drug material, it is susceptible to insect attacks, mildew, and difficult to preserve. The objective of the present invention is to provide a kind of Chinese caterpillar fungus with a protective coating and the preparation method thereof. A protective coating of gel is applied to the shell of Chinese caterpillar fungus to tackle the difficulty related to the Chinese caterpillar fungus in its preservation and the dissipation of drug efficacy. The cost of the preparation method is low and it is convenient and practical.

Rinse the Chinese caterpillar fungus → Drying → Gel Preparation → Applying gel → Drying → Finished product

(BJ) No. 1456

## Patent Claim

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1. Chinese caterpillar fungus with a protective coating and the preparation method thereof, wherein it is characterized that a protective coating of gel is applied to the shell of the Chinese caterpillar fungus, and the composition and the weight percentage of the protective coating can be as follows:

- |     |                           |                     |                  |
|-----|---------------------------|---------------------|------------------|
| (1) | Animal gelatin 10% to 50% | glycerol 10% to 40% | water 10% to 80% |
| (2) | Agar 1% to 60%            | water 20% to 80%    |                  |
| (3) | Starch 1% to 60%          | water 20% to 80%    |                  |

The process of preparing the Chinese caterpillar fungus with a protective coating is as follows:

- (1) Rinse the Chinese caterpillar fungus, and dry it;
- (2) Prepare the individual components in accordance with the composition and weight percentage of the protective coating for the Chinese caterpillar fungus to form a fluid gel;

a. Glycerol is added into water, the solution is heated to 40 °C to 100 °C, and mixed well. Then animal gel is added into the solution to be mixed and melted, after which the solution is maintained at the temperature and allowed to stand so that the foam floats up. The foam is removed, the solution is filtered and the gel is obtained;

b. Agar is added into water, the solution is heated to 40 °C to 120 °C to be stirred and melted, the solution is maintained at the temperature and allowed to stand, and then the solution is filtered and the gel is obtained;

c. Starch is added into water, the solution is heated to 20 °C to 100 °C to be stirred and melted, the solution is maintained at the temperature and allowed to stand, and the gel is obtained;

(3) A coating of anti-sticking oil is applied to the interior of the mold, some gel prepared in process (2) is poured into the mold, then the Chinese caterpillar fungus prepared in process (1) is set in the gel and then the mold is filled up with the gel so that the Chinese caterpillar fungus is completely immersed in the gel. After the gel is cooled, the product is removed from the mold, and dried to get the final product.

2. According to the Chinese caterpillar fungus with a protective coating and the preparation method thereof described in Claim 1, wherein it is characterized that the mold used for molding can take a variety of shapes, such as cylinder, prism and so on, and each mold can contain one or multiple Chinese caterpillar fungi.

3. According to the Chinese caterpillar fungus with a protective coating and the preparation method thereof described in Claim 1, wherein it is characterized that process (3) of the preparation method can also be:

a. On a flat and smooth panel, a thin film of gel prepared in process (2) is applied to the panel, which becomes a gel film after being dried, the Chinese caterpillar fungus

prepared in process (1) is wrapped in the gel films, then the edges of the film are sealed through pressure and trimming, the product is dried to get final product;

b. The Chinese caterpillar fungus prepared in process (1) is dipped directly into the gel prepared in process (2), and then it is removed from the gel, cooled down, dried, to get the final product.

4. According to the Chinese caterpillar fungus with a protective coating and the preparation method thereof described in Claim 1, wherein it is characterized that the component and the weight percentages of the protective coating can also be:

Sodium alginate 1% to 60%, water 40% to 80% calcium solution of 1% to 60%.

Wherein the preparation method is that sodium alginate is dissolved in water to form a gel, the rinsed and dried Chinese caterpillar fungus is dipped directly into the gel described above, after the Chinese caterpillar fungus is removed from the gel, calcium salt solution is sprayed on it. Then it is dried to get the final product.

5. According to the Chinese caterpillar fungus with a protective coating and the preparation method thereof described in Claim 1, wherein it is characterized that the animal gelatin can be gelatin, it can also be gel of deer antler gelatin, donkey hide gelatin, tortoise plastron gelatin, etc.

## Patent Description

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Chinese caterpillar fungus with a protective coating and the preparation method thereof

The present invention relates to the preservation of an herbal medicine and the preparation method thereof.

Chinese caterpillar fungus, also known as winter worm and summer grass, is a valuable Chinese herbal medicine with a wide range of pharmacological effects and health care effects, which makes it extremely popular among people. However, as a raw drug material, it is susceptible to insect attacks, mildew, and difficult to preserve. Over the time period involved in its harvesting, preservation and use, the drug efficacy gradually weakens, and even the intrinsic materials are dissipated, leaving only an empty shell. So far, no one has proposed any effective way to solve those issues.

The objective of the present invention is to provide Chinese caterpillar fungus with a protective coating and the preparation method thereof, and it can be used to protect Chinese caterpillar fungus from insect attacks and mildew, providing a solution to the difficulty related to the Chinese caterpillar fungus in its preservation and dissipation of drug efficacy. The current preparation method is simple and practical.

The objective of the present invention is realized this way: a protective coating of gel is applied to the shell of the Chinese caterpillar fungus, and the composition and weight percentages of the protective coating can be as follows:

- |     |                           |                     |                  |
|-----|---------------------------|---------------------|------------------|
| (1) | Animal gelatin 10% to 50% | glycerol 10% to 40% | water 10% to 80% |
| (2) | Agar 10% to 60%           | water 20% to 80%    |                  |
| (3) | Starch 1% to 60%          | 20% to 80%          |                  |

The process of preparing the Chinese caterpillar fungus with a protective coating is as follows:

- (1) The Chinese caterpillar fungus is rinsed and dried;
- (2) Prepare the individual components in accordance with the composition and weight percentages of the protective coating for the Chinese caterpillar fungus to form a fluid gel;

a. Glycerol is added into water, the solution is heated to 40 °C to 100 °C, and mixed well. Then animal gelatin (gelatin, can also be deer antler gelatin, donkey hide gelatin, tortoise plastron gelatin, etc) is added in, the solution is stirred, and melted, the solution is maintained at the temperature and allowed to stand so that the foams float up. The foams are removed and the solution is filtered to get the gel;

b. Agar is added into water, the solution is heated to 40 °C to 120 °C, and the solution is stirred, and melted, the solution is maintained at the temperature and allowed to stand, the solution is filtered to get the gel;

c. Starch is added into water, the solution is heated to 20 °C to 100 °C, and the solution is stirred and melted, the solution is maintained at the temperature and allowed to stand to form a gel;

(3) A coating of anti-sticking oil is applied to the interior of the mold, some gel prepared in process (2) is poured into the mold, then the Chinese caterpillar fungus prepared in process (1) is set in the gel and then the mold is filled up with the gel so that the Chinese caterpillar fungus is completely covered with the gel. After the gel is cooled, the product is removed from the mold, and dried to get the final product. The molds can take a variety of shapes, such as cylinder, prism and so on, and each mold can contain one or multiple Chinese caterpillar fungi. This technology can also be applied by applying a thin film of the gel prepared in process (2) to the surface of a flat and smooth panel, which is then dried into a film. The Chinese caterpillar fungi prepared in process (1) are wrapped in the film, and then the edges of the film are sealed through pressure, trimming and drying, after which the final product is prepared. For that process, the Chinese caterpillar fungus prepared in process (1) can be dipped directly into the gel prepared in process (2), and then the product is removed from the gel, cooled down, dried, to get the final product;

Chinese caterpillar fungus with a protective coating and the preparation method thereof can also be prepared with the following components, 1% to 60% of sodium alginate, 40% to 80% of water, and 1% to 60% of calcium salt solution. The preparation method is that sodium alginate is dissolved in water to form a gel, the rinsed and dried Chinese caterpillar fungus is dipped directly into the gel, the Chinese caterpillar fungus is removed from the gel and calcium salt solution is sprayed on it. After it is dried, the final product is obtained.

In the process described above, ginseng, American ginseng, Chinese wolfberry and other nourishing substances can be also added into the protective coating. In that process, first, water is added to an appropriate amount of ginseng, or American ginseng, or wolfberry which is simmered with a slow fire, and then the simmered herbal solution is filtered and the amount of filtrate can be calculated according to the weight percentage of water in the protective coating of the Chinese caterpillar fungus, and this can further enhance the efficacy as well as the health benefits of the Chinese caterpillar fungus.

In the present invention, a protective coating is applied to the Chinese caterpillar fungus, and the Chinese caterpillar fungus is sealed in the protective coating. This method can effectively prevent fungal contamination, the occurrence of mildew, as well as attacks from the insects. In the mean time, due to the existence of the protective coating, the Chinese caterpillar fungus is isolated from the surrounding environment, thus the dissipation of the active ingredient of the drug can be prevented and the drug efficacy and health care value of the Chinese caterpillar fungus can be preserved for a prolonged period of time. The present preparation method is simple and the cost is low. The protective coating is semi-transparent and easily dissolved in water, and the appearance of the product is beautiful.

Figure 1 attached is a diagram in illustration of the process flow in the present invention, and Figures 2 and Figure 3 are diagrams in illustration of the structure of the product in the present invention. In Figure 2 and Figure 3, 1 is the Chinese caterpillar fungus and 2 is the protective coating.

The following provides additional explanation about the present invention through the use of figure attachments.

As shown in Figure 1, the process of the present invention consists in the following steps: Chinese caterpillar fungus is rinsed and dried for later use; the gel is prepared according to the components of the protective coating, and then the Chinese caterpillar fungus is sealed in the gel or coating film, and dried to get the final product.

#### Illustrative Case 1 of the Implementation

200 grams of gelatin, 170 grams of glycerol, 360 grams of water, 500 pieces of Chinese caterpillar fungus, and 500 pieces of Chinese wolfberry; the Chinese caterpillar fungus is rinsed and dried in shade. Glycerol is added into water, and the solution heated to 80 °C and mixed thoroughly. Then gelatin is added into the solution, and the solution is stirred and melted, the solution is maintained at the temperature for 1.5 hours and allowed to stand so that foams float up. The foams are removed, the solution is filtered to get the gel, and it is maintained at the temperature for later use. Apply sesame oil to the interior of a cylindrical mold, into which some gel is poured, and then the rinsed and dried Chinese caterpillar fungus is set in the gel and a Chinese wolfberry is placed on the head of the Chinese caterpillar fungus, after which the mold is filled up with the gel, so that the Chinese wolfberry and the Chinese caterpillar fungus are completely sealed in the gel. Blow cold air to the product for 2 hours to allow it to solidify, and then the product is taken out of the mold and placed in an oven to be dried at 30 °C for 2 hours. Thus we have made a Chinese caterpillar fungus with a protective coating. Placing a Chinese wolfberry on the head of the Chinese caterpillar fungus makes the product more appealing in its appearance, as shown in Figure 3. In Figure 3, 1 is the Chinese caterpillar fungus, 2 is the protective coating, and 3 is the Chinese wolfberry.

#### Illustrative Case 2 of the Implementation

250 grams of agar, 250 grams of water, and 500 pieces of Chinese caterpillar fungus;

The Chinese caterpillar fungus is washed and dried in shaded areas. Agar is added into the water, and the solution heated to 100 °C and stirred to allow melting. The solution is maintained at the temperature for 1 hour and allowed to stand, and it is filtered to get the gel. On a flat and smooth panel (a glass panel) coated with sesame oil, the gel is evenly applied to form a thin film, the thickness of which measures about 1 mm. The gel is exposed to hot air for the drying process to solidify into a film. The film is peeled off from the smooth panel, the Chinese caterpillar fungus is sealed with the film, and then the edges are sealed with pressure, trimming, and the final product is obtained after it is dried.

#### Illustrative Case 3 of the Implementation

250 grams of green pea starch, 1000 grams of water, and 500 pieces of fresh Chinese caterpillar fungus;

The Chinese caterpillar fungus is rinsed and dried in a shaded area. Green pea starch is added into water, heated to 100 °C, and stirred to allow melting. The solution is maintained at the temperature and allowed to stand to form a gel. The Chinese caterpillar fungus is dipped directly into the gel so that the exterior of the Chinese caterpillar fungus is covered with the gel. The Chinese caterpillar fungus is taken out of the gel and dried with cold air. After the gel solidifies, the product is placed in an oven at 60 °C for second drying, and the final product is obtained.

#### Illustrative Case 4 of the Implementation

250 grams of sodium alginate, 500 grams of water, 500 pieces of Chinese caterpillar fungus, and 200 grams of 20% calcium chloride solution.

Calcium alginate is dissolved in water to form a gel. The rinsed and dried Chinese caterpillar fungus is dipped into the gel mentioned above so that the exterior of the Chinese caterpillar fungus is completely covered with the sodium alginate gel. After the Chinese caterpillar fungus is taken out of the gel, calcium chloride solution is sprayed onto the shell of the Chinese caterpillar fungus to form a semi-transparent film on the shell of the Chinese caterpillar fungus. The Chinese caterpillar fungus with a protective coating is formed after it is dried.

**Figure Attachment in Illustration of the Patent Description**

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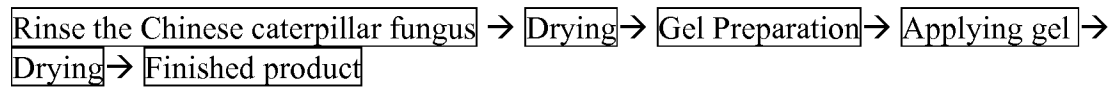
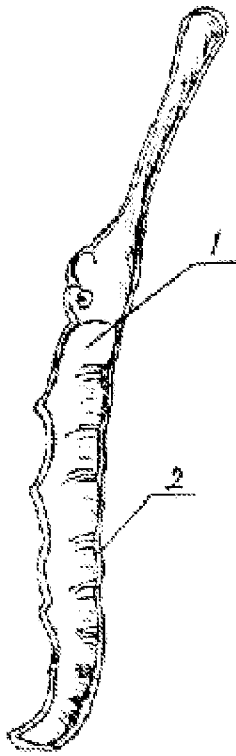


Figure 1

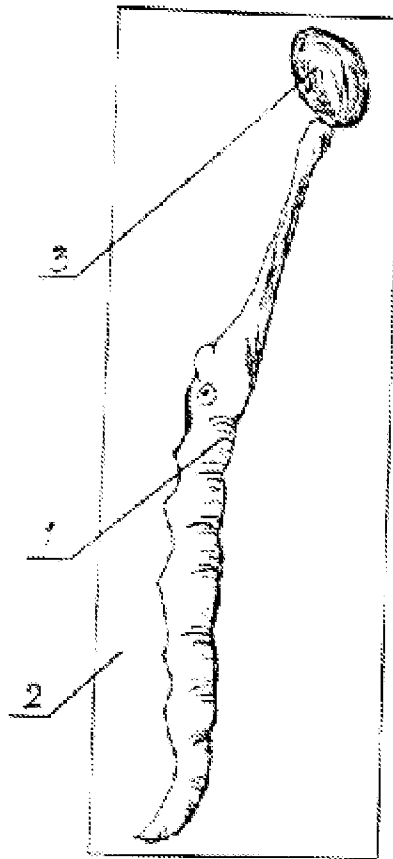


**Figure Attachment in Illustration of the Patent Description**

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**Figure 2**



**Figure 3**